

U.S. Patent

Nov. 4, 1997

Sheet 1 of 7

5,683,866

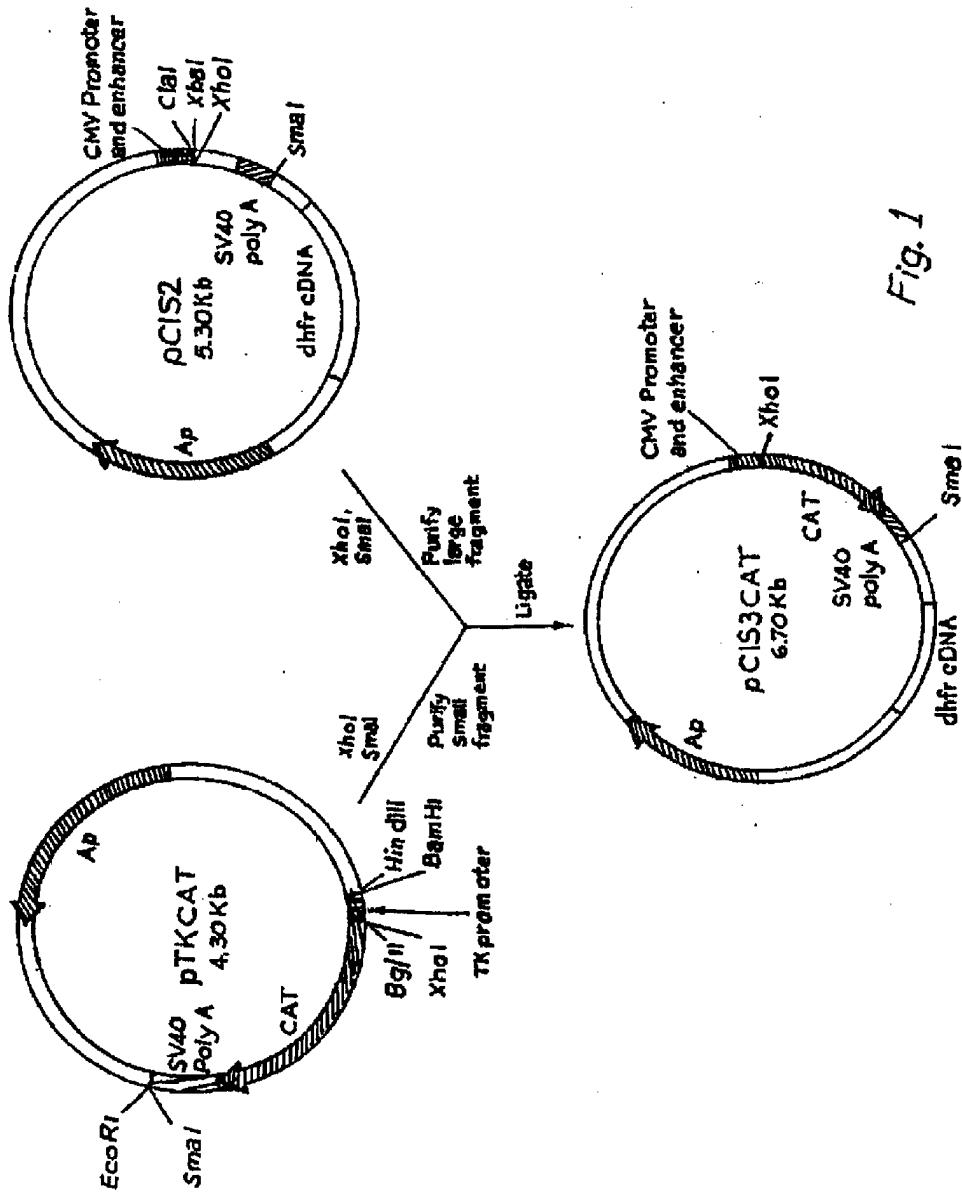


Fig. 1

**U.S. Patent**

Nov. 4, 1997

Sheet 2 of 7

**5,683,866**

1 2 3



*Fig. 2*

U.S. Patent

Nov. 4, 1997

Sheet 3 of 7

5,683,866

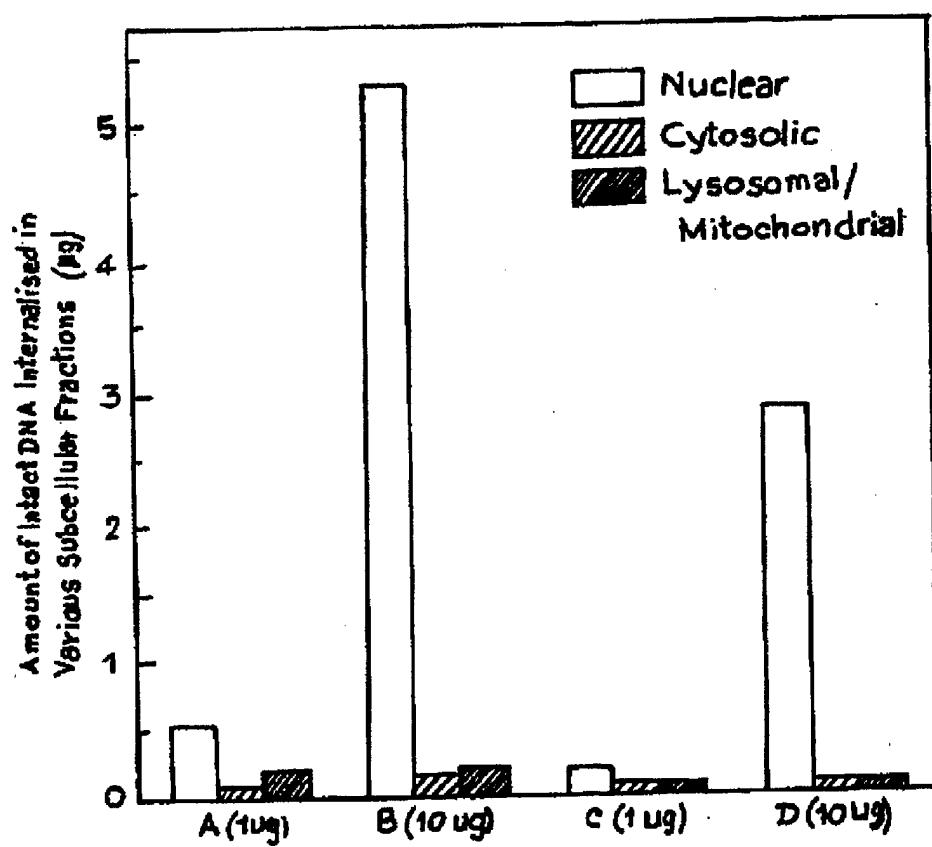


Fig. 3a

U.S. Patent

Nov. 4, 1997

Sheet 4 of 7

5,683,866

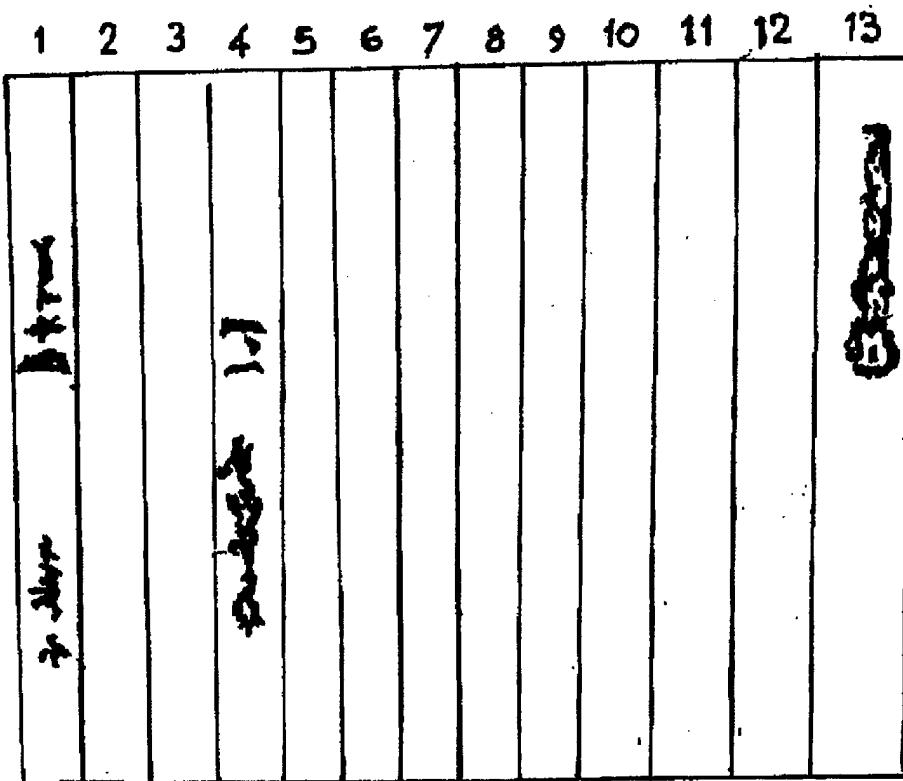


Fig. 3b

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 1 of 29

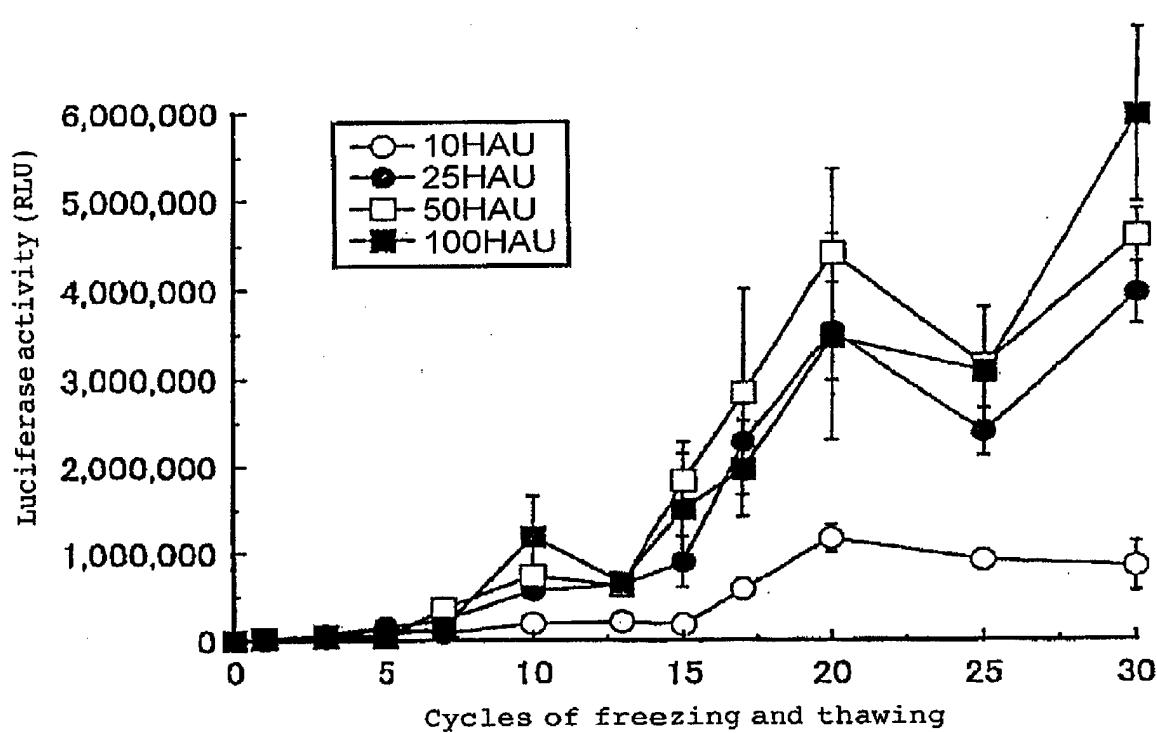
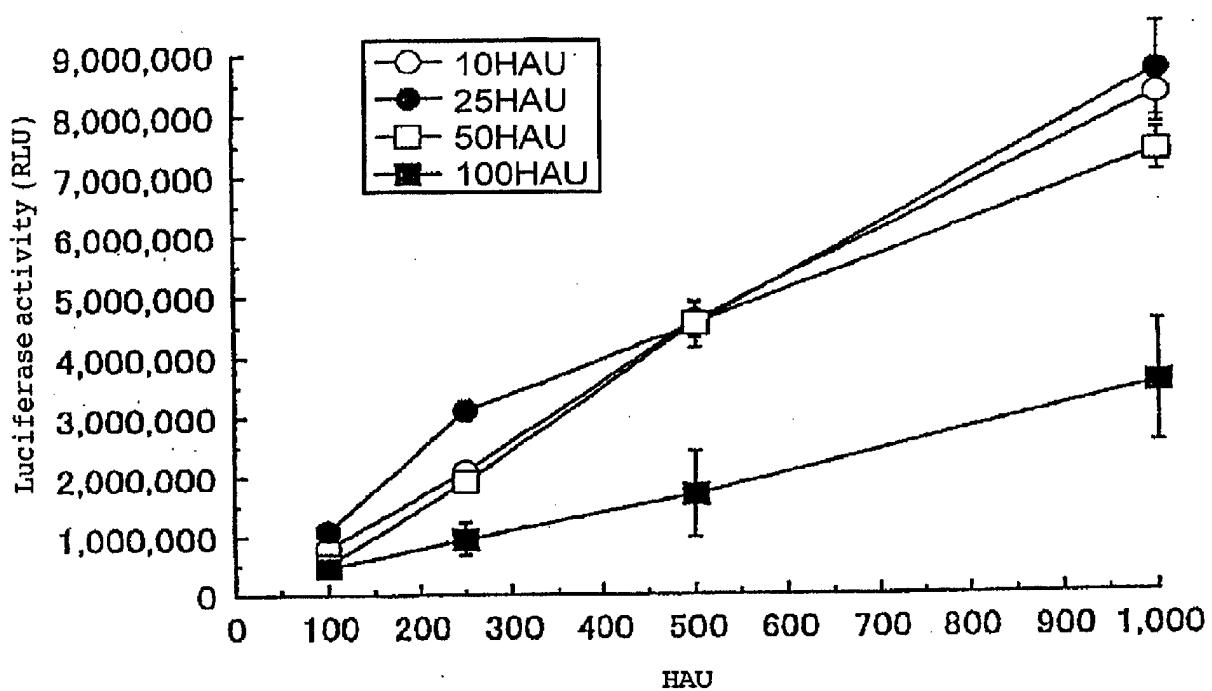


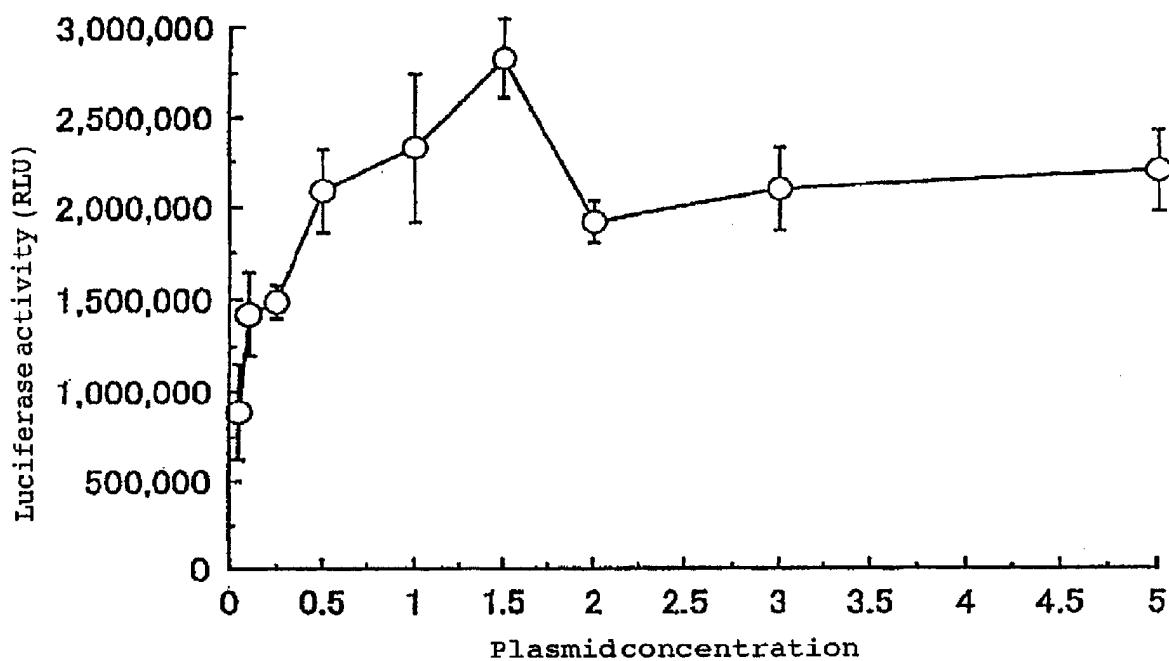
Fig. 1

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 2 of 29



**Fig. 2**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 3 of 29



**Fig. 3**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 4 of 29

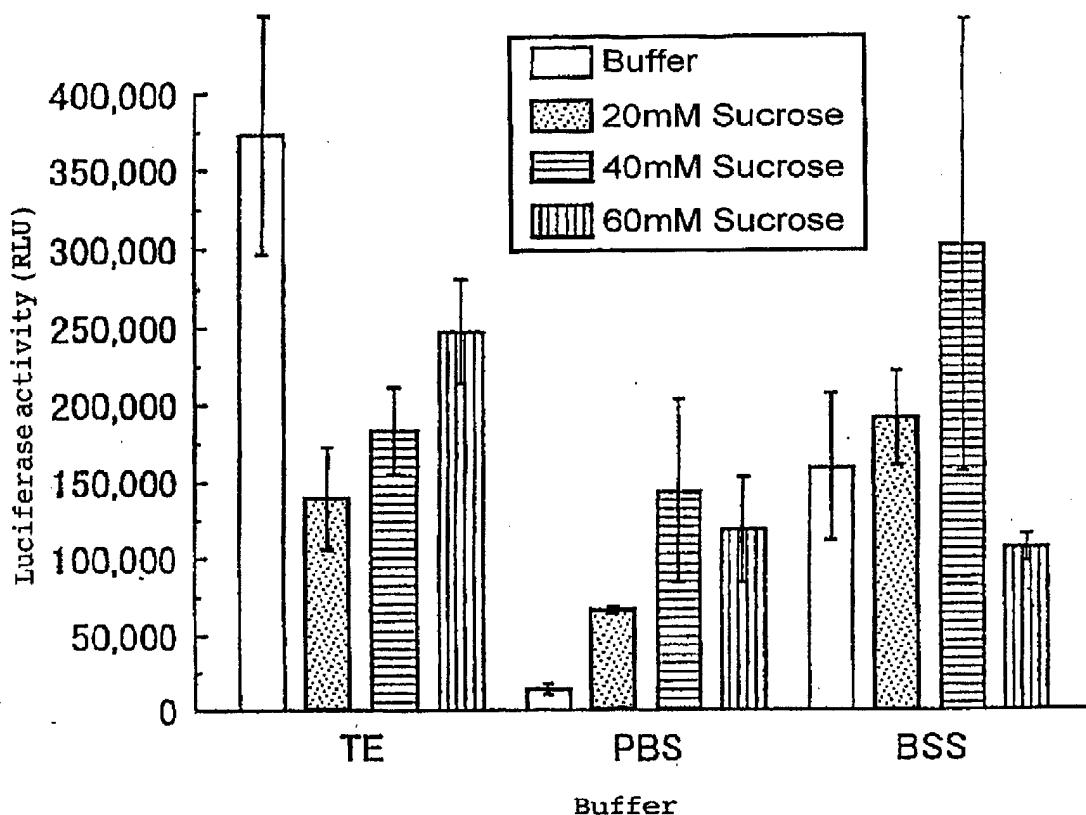


Fig. 4

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
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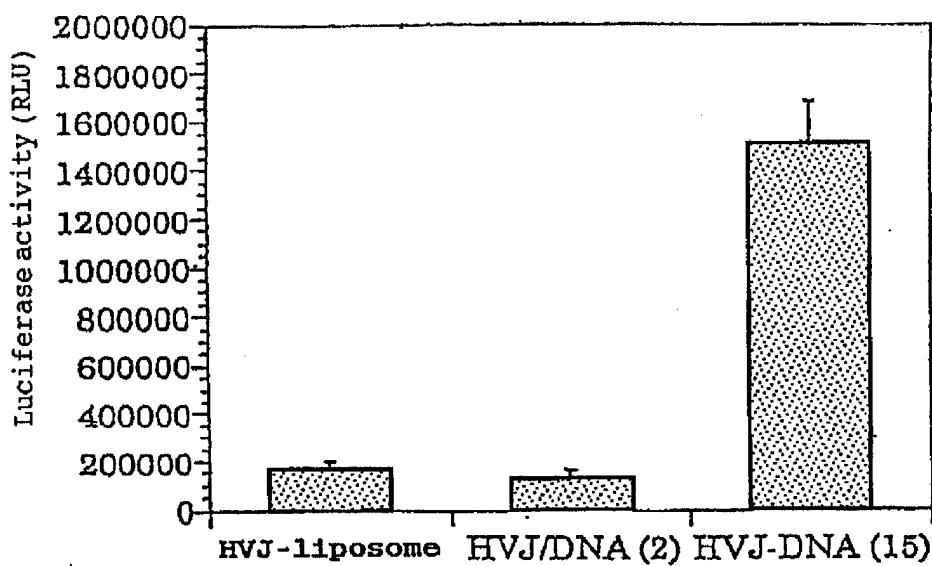


Fig. 5

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
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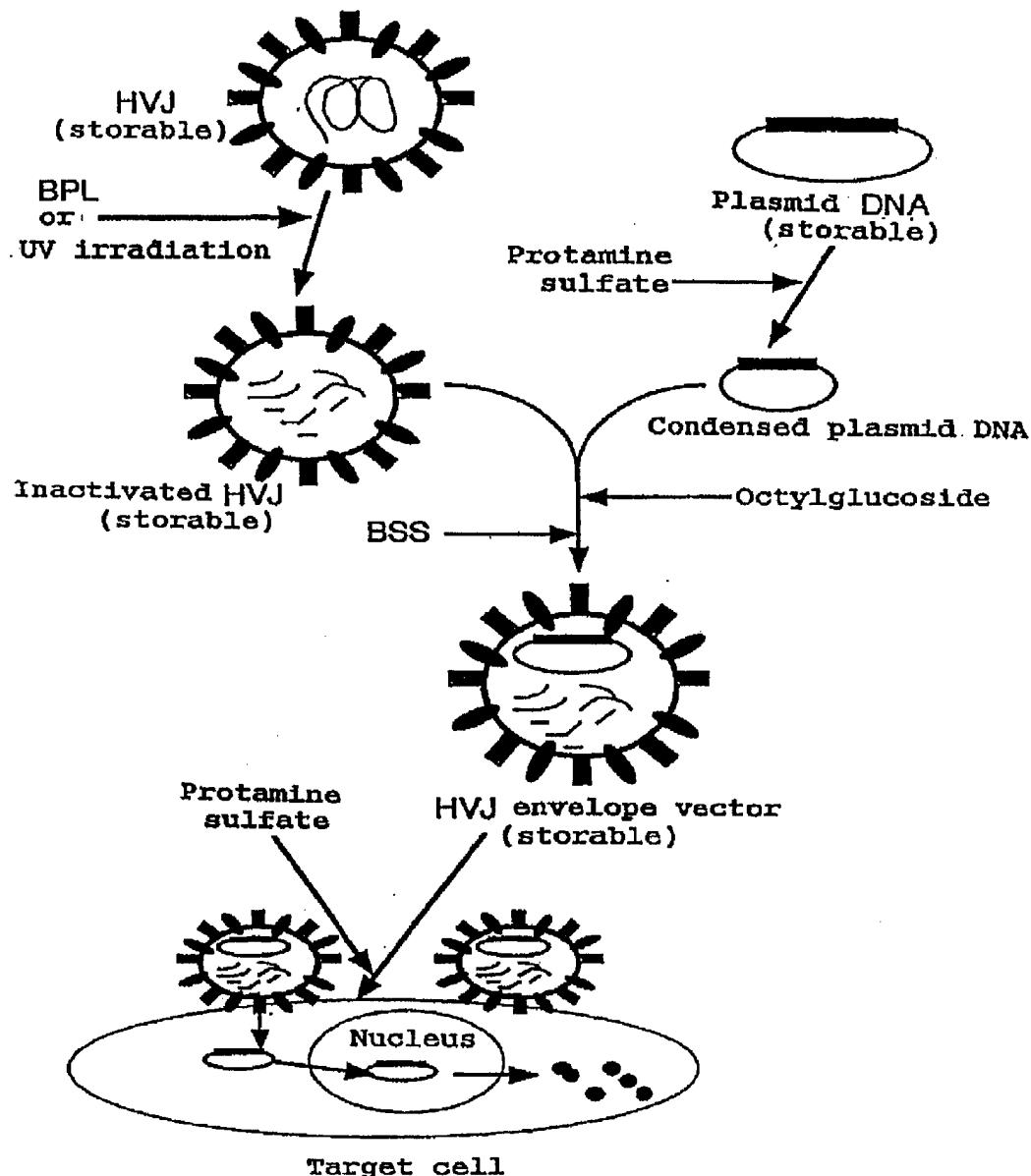


Fig. 6

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
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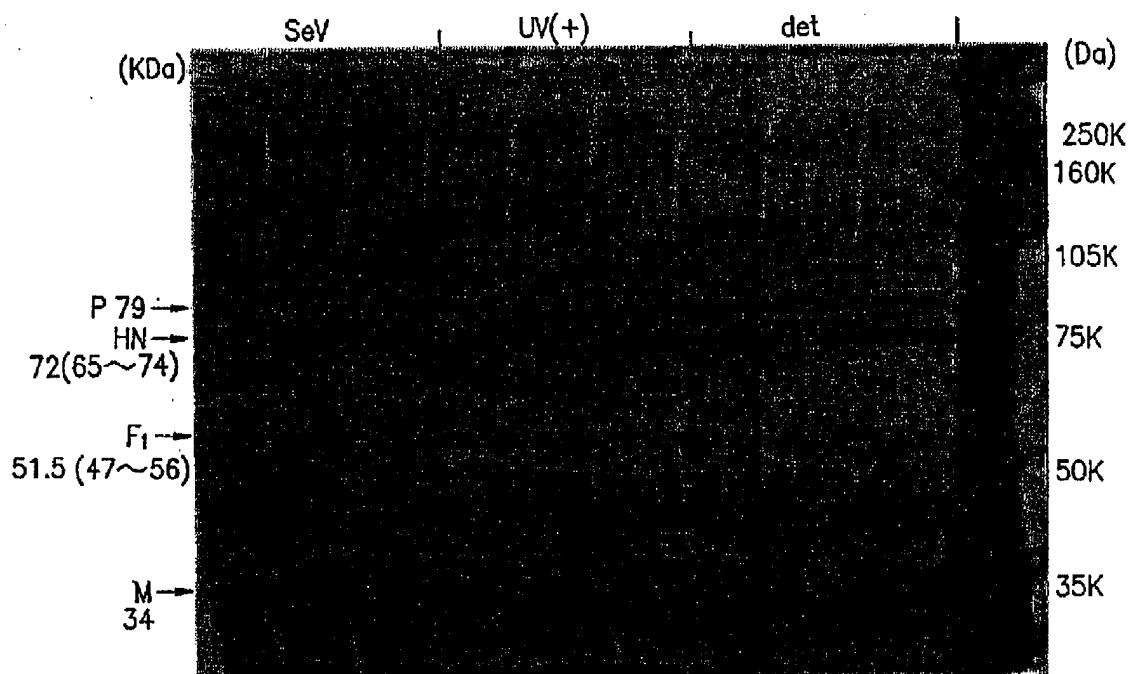
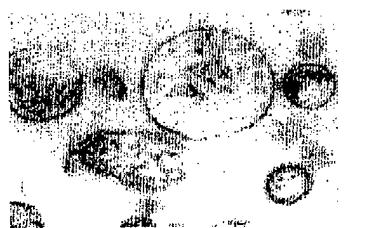


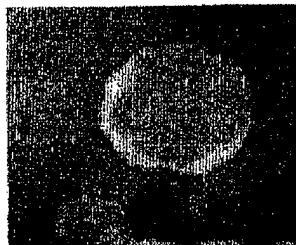
Fig. 7

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TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
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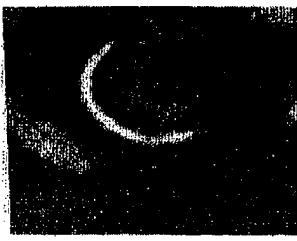


— 100nm

**Fig. 8A**



**Fig. 8B**



**Fig. 8C**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
 TRANSFER  
 Inventors: Yasufumi Kaneda  
 Attorney Docket No. 59150-8010  
 Customer No. 22918 Sheet 9 of 29

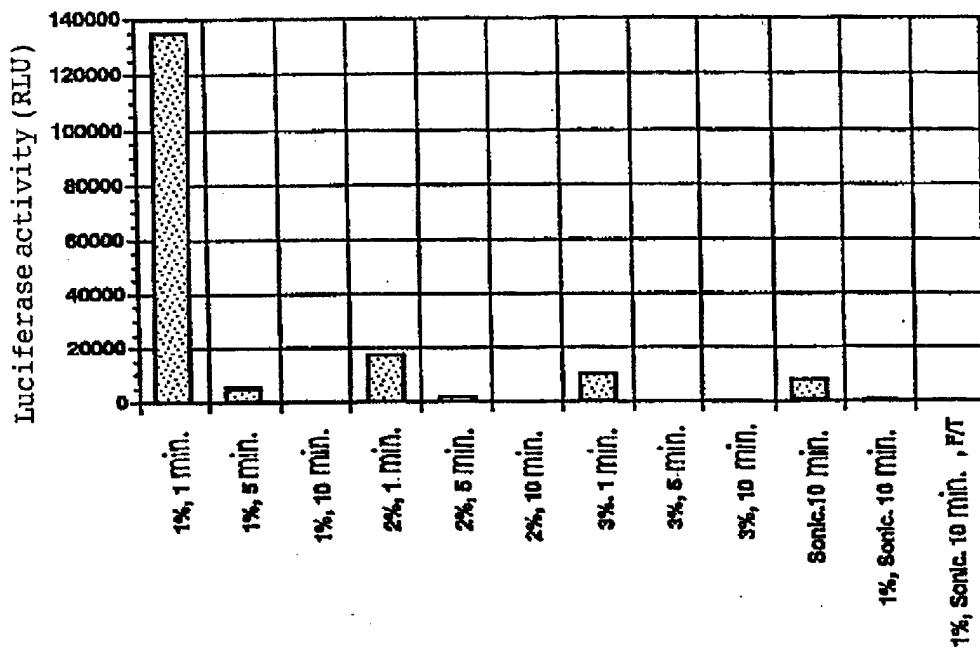


Fig. 9A

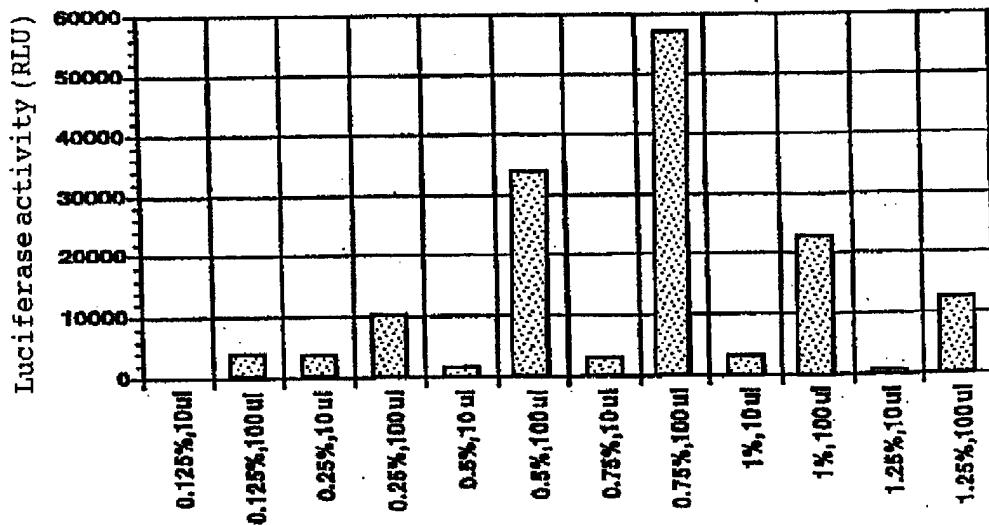


Fig. 9B

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
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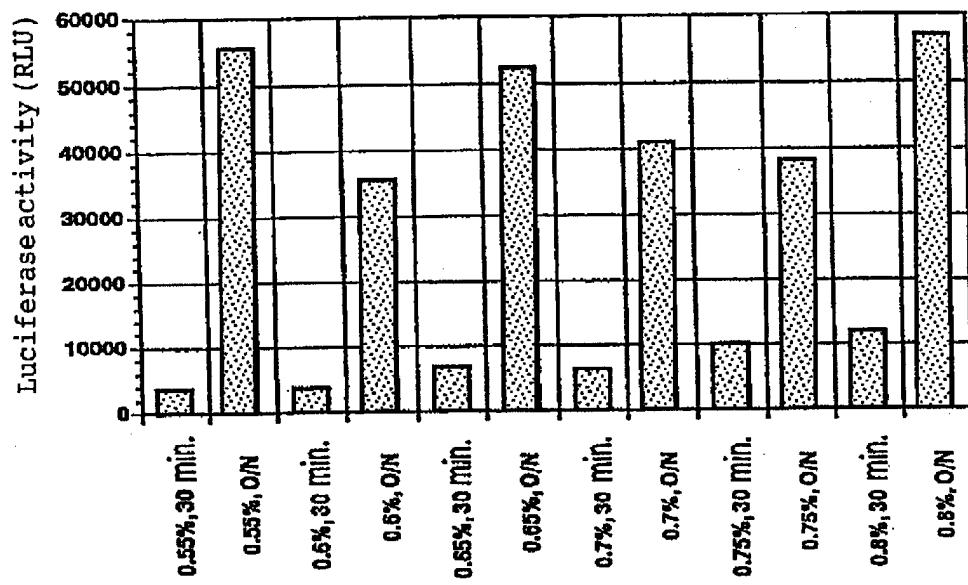


Fig. 9C

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 11 of 29

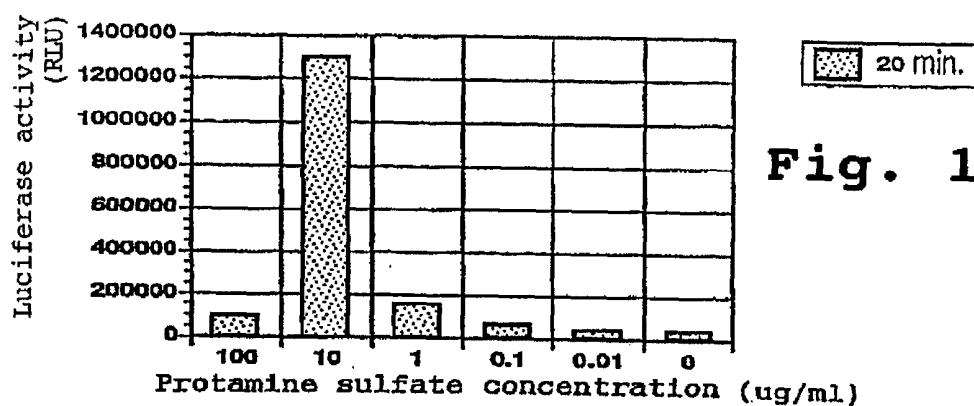


Fig. 10A-1

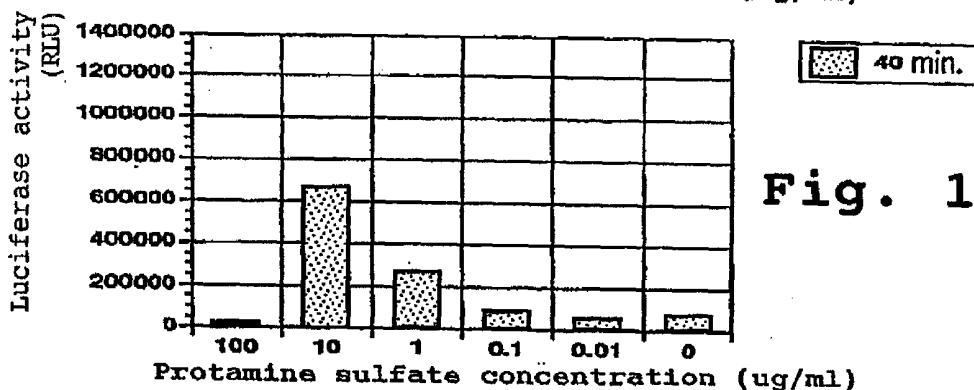


Fig. 10A-2

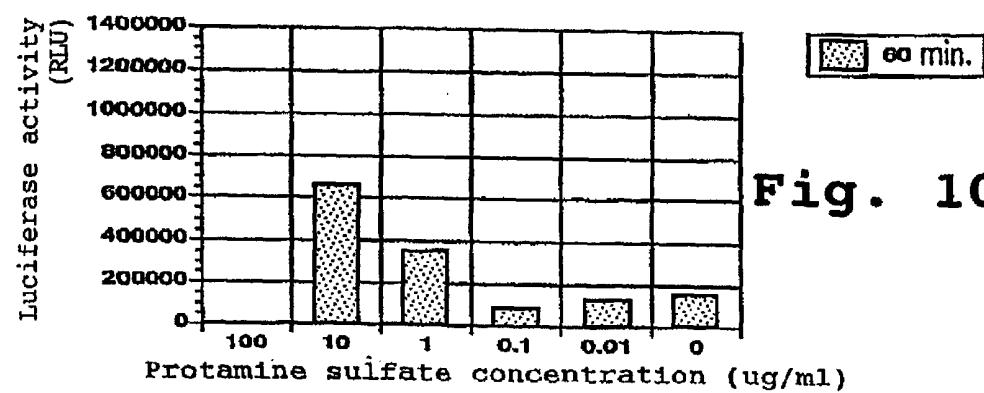


Fig. 10A-3

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 12 of 29

Effects of protamine sulfate on gene transfer by HVJ envelope vector

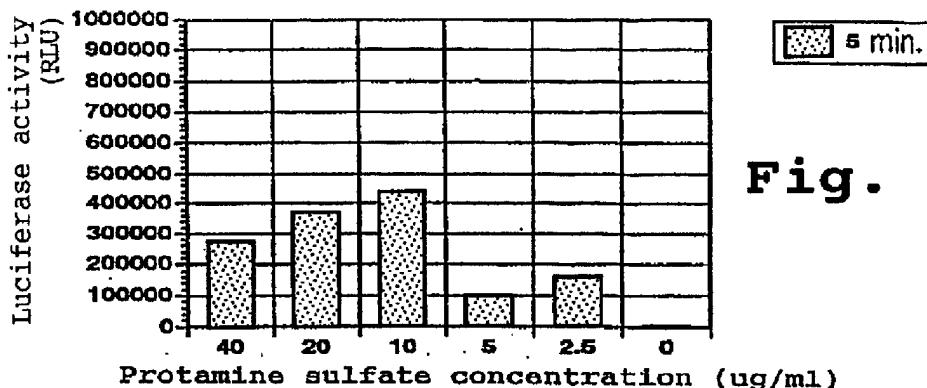


Fig. 10B-1

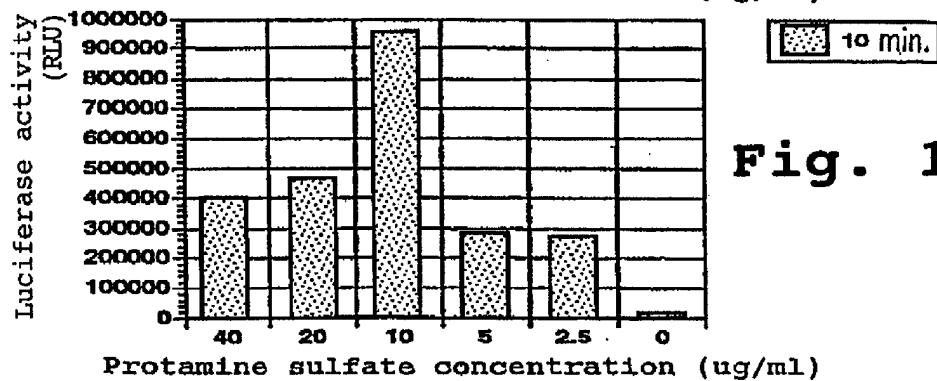


Fig. 10B-2

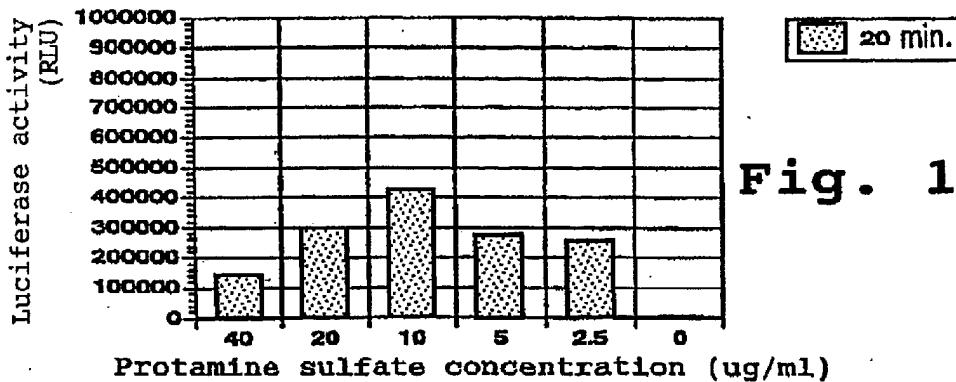


Fig. 10B-3

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 13 of 29

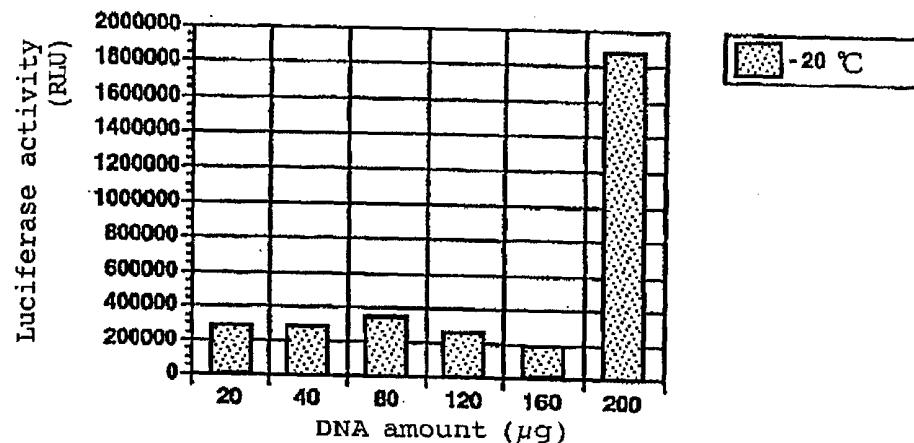


Fig. 11A-1

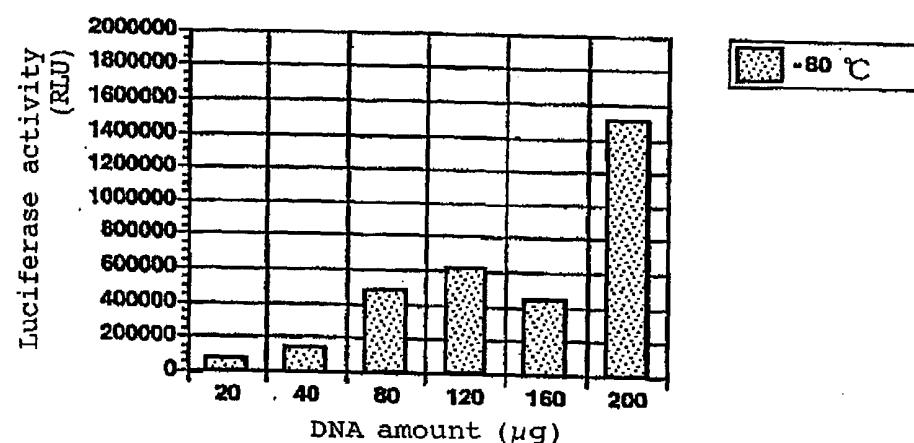
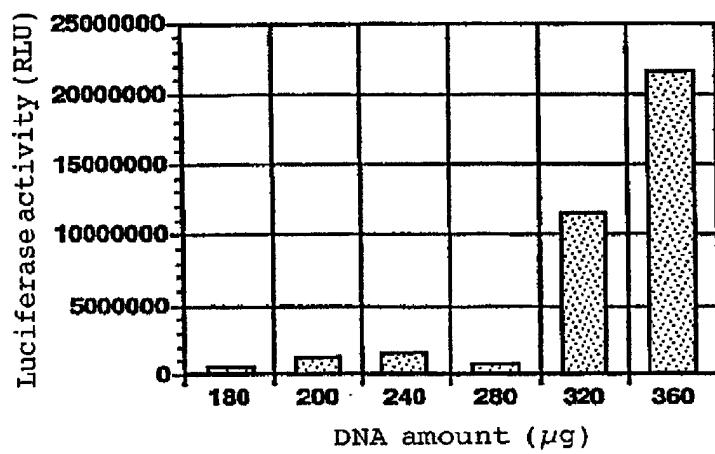


Fig. 11A-2

Title: VIRUS ENVELOPE VECTOR FOR GENE  
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Inventors: Yasufumi Kaneda  
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Customer No. 22918 Sheet 14 of 29



**Fig. 11B**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
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Customer No. 22918 Sheet 15 of 29

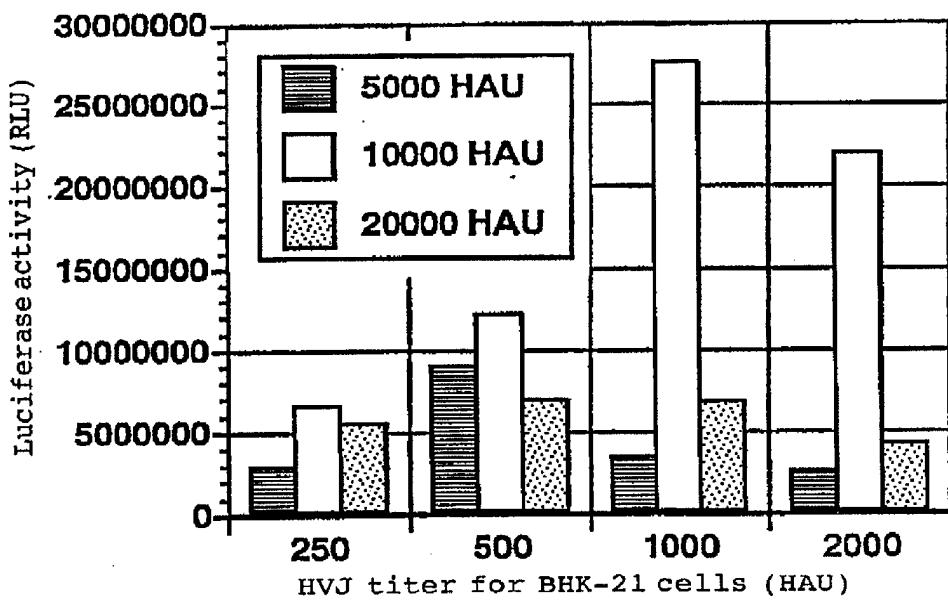
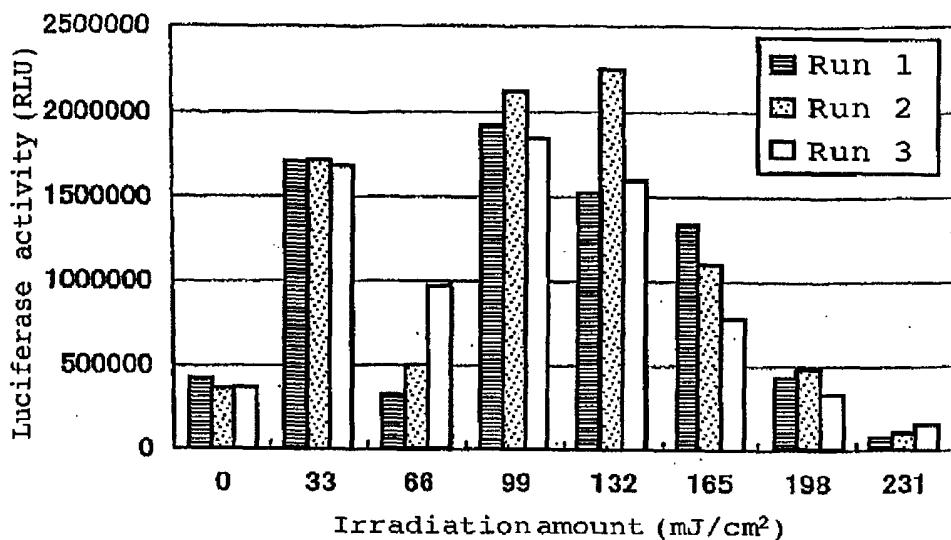
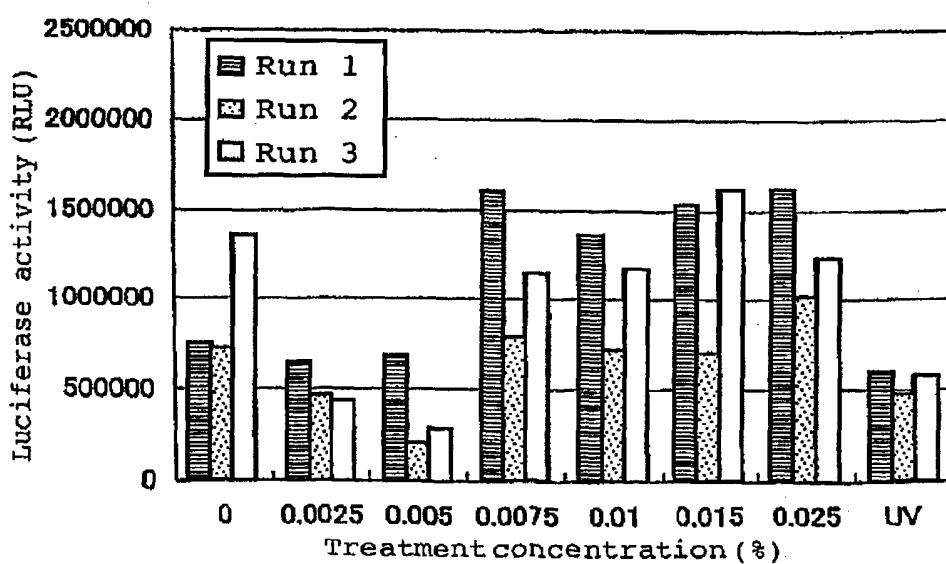


Fig. 12

Title: VIRUS ENVELOPE VECTOR FOR GENE  
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Inventors: Yasufumi Kaneda  
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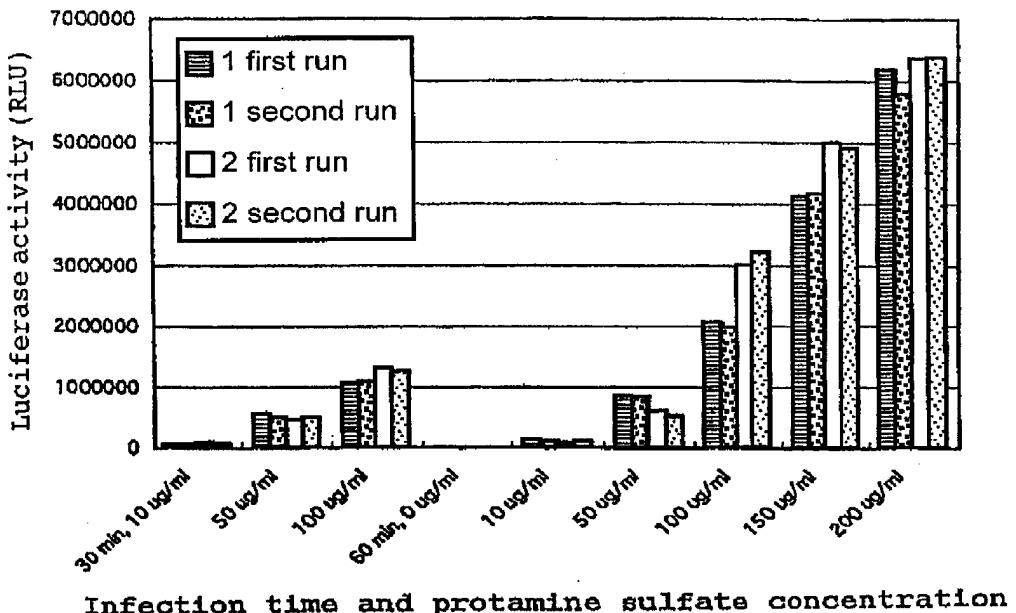


**Fig. 13A**



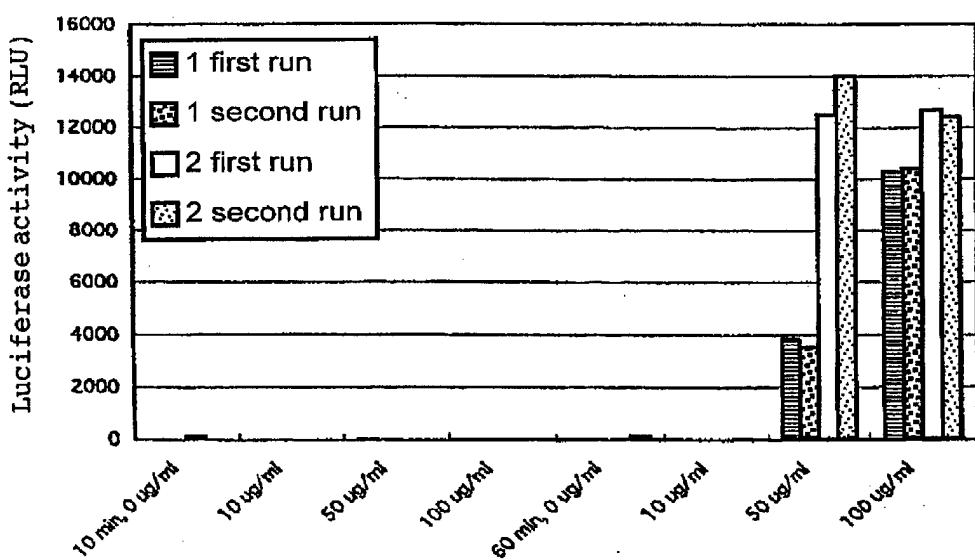
**Fig. 13B**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
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Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 17 of 29



Infection time and protamine sulfate concentration

Fig. 14



Infection time and protamine sulfate concentration

Fig. 15

Title: VIRUS ENVELOPE VECTOR FOR GENE  
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Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 18 of 29

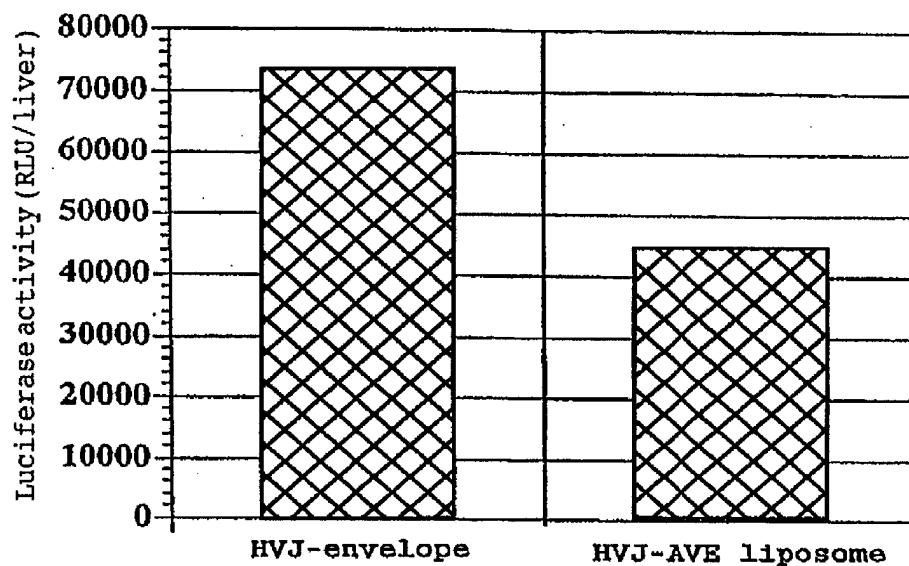


Fig. 16A

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 19 of 29

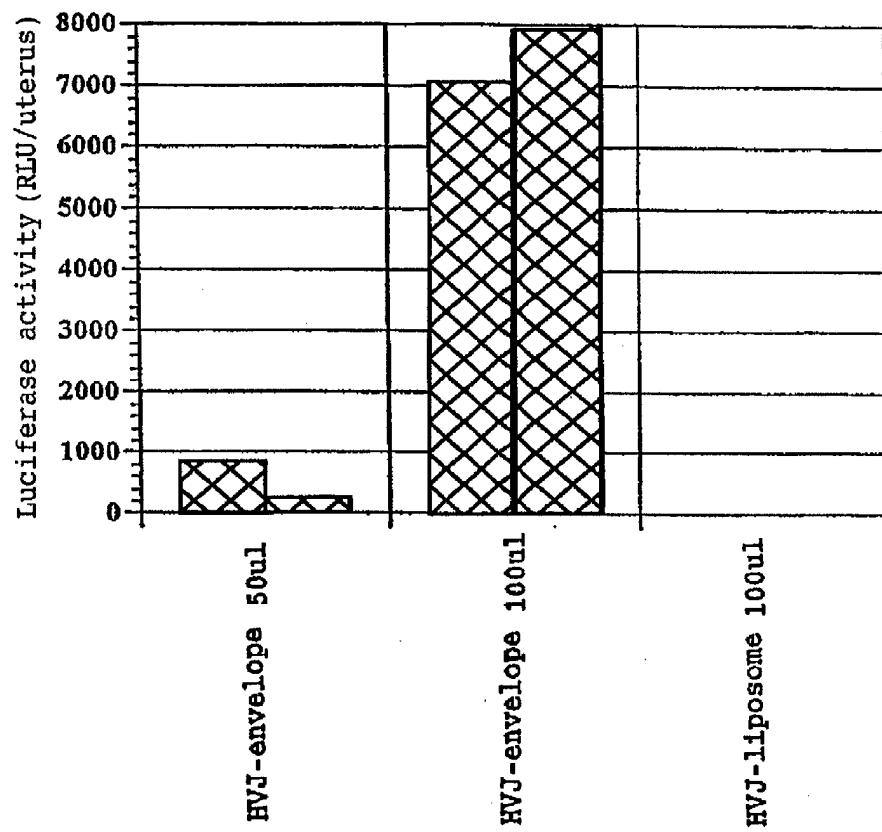


Fig. 16B

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Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 20 of 29

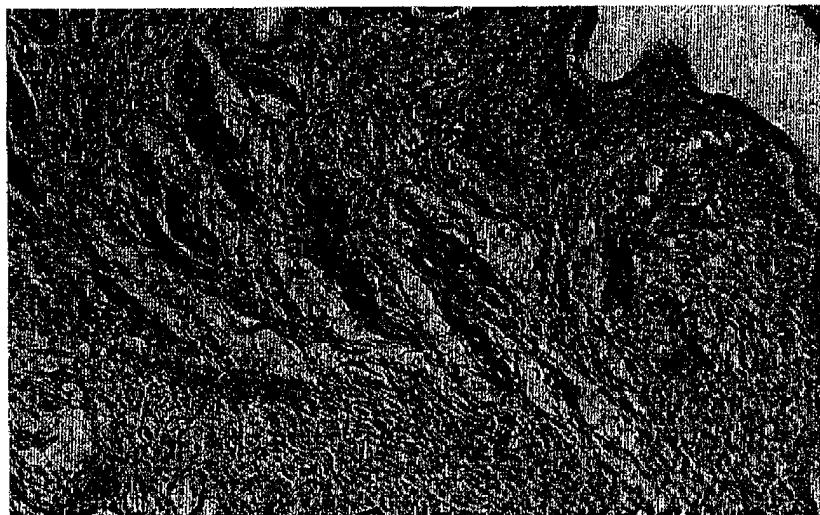


Fig. 16C

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 21 of 29

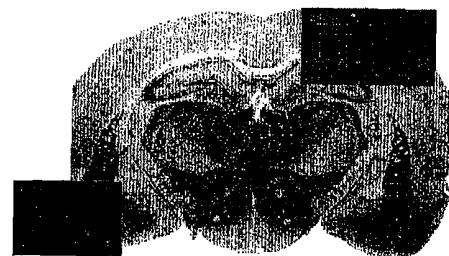


Fig. 16D-1

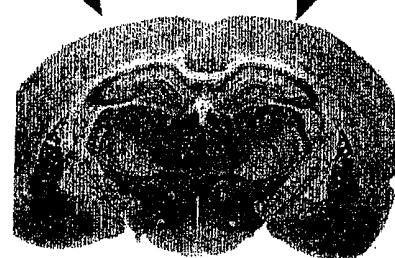


Fig. 16D-2

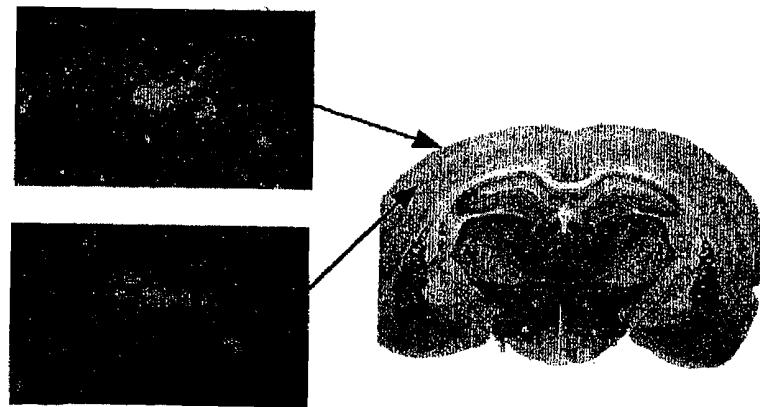
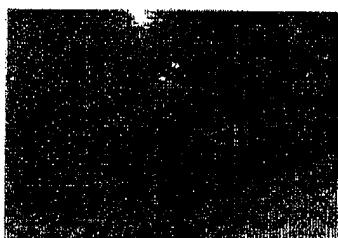


Fig. 16D-3

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
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Customer No. 22918 Sheet 22 of 29



VEGF 200ng

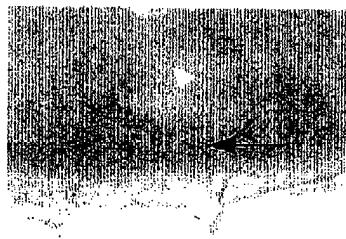
pcNK5 6.7 $\mu$ gpcNK5 13.3 $\mu$ g

Fig. 16E

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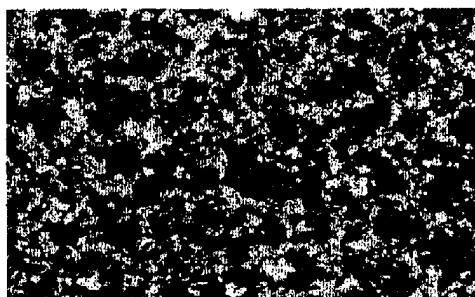
Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 23 of 29



**Fig. 16F**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-3010  
Customer No. 22918 Sheet 24 of 29

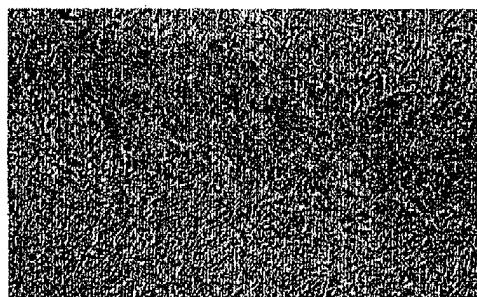
Fluorescence image



60 min

**Fig. 17A-1**

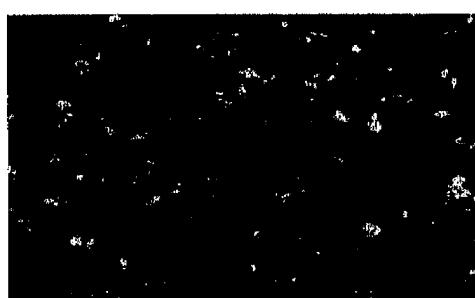
Phase-contrast image



60 min

**Fig. 17A-2**

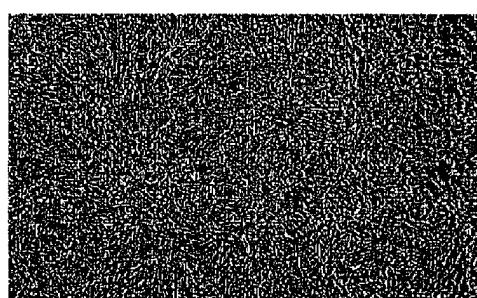
Fluorescence image



10 min

**Fig. 17B-1**

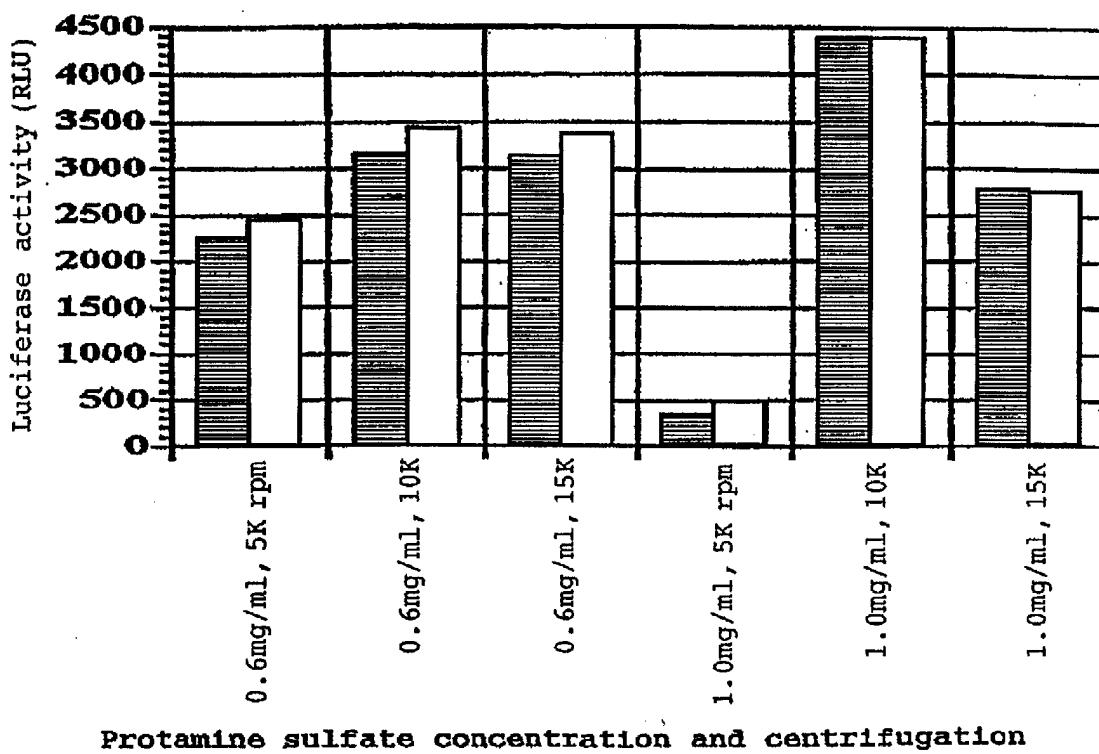
Phase-contrast image



10 min

**Fig. 17B-2**

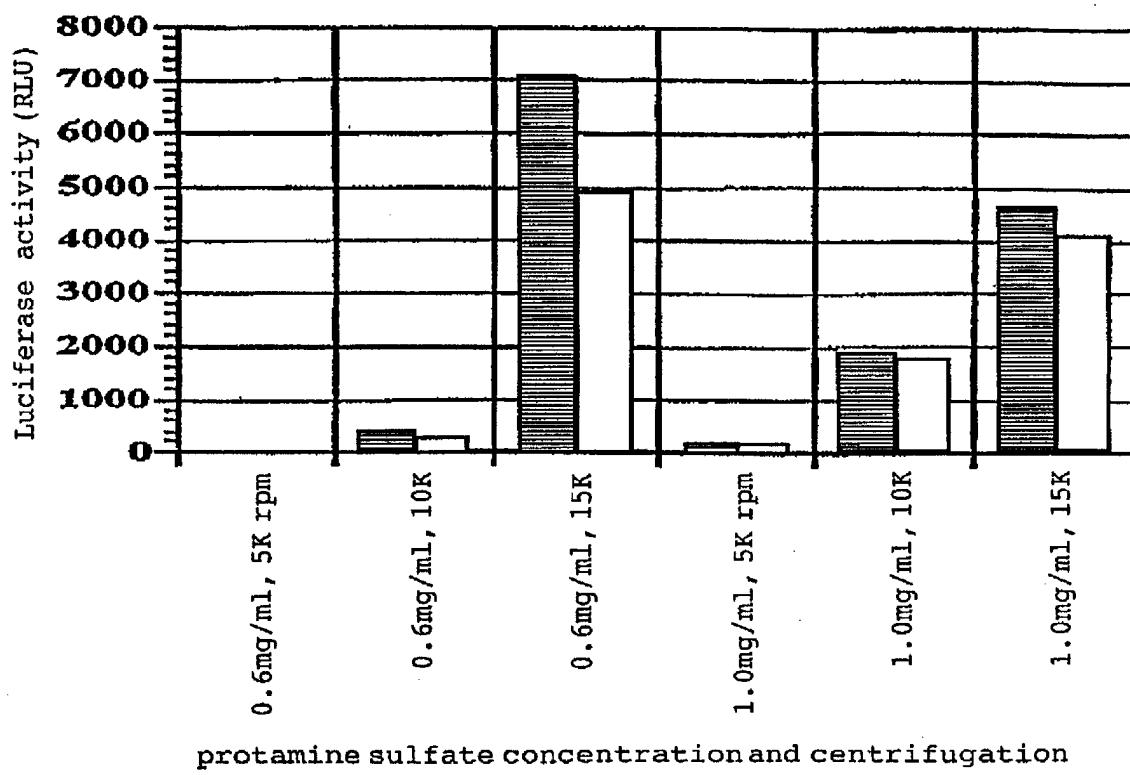
Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 25 of 29



Protamine sulfate concentration and centrifugation

Fig. 18A

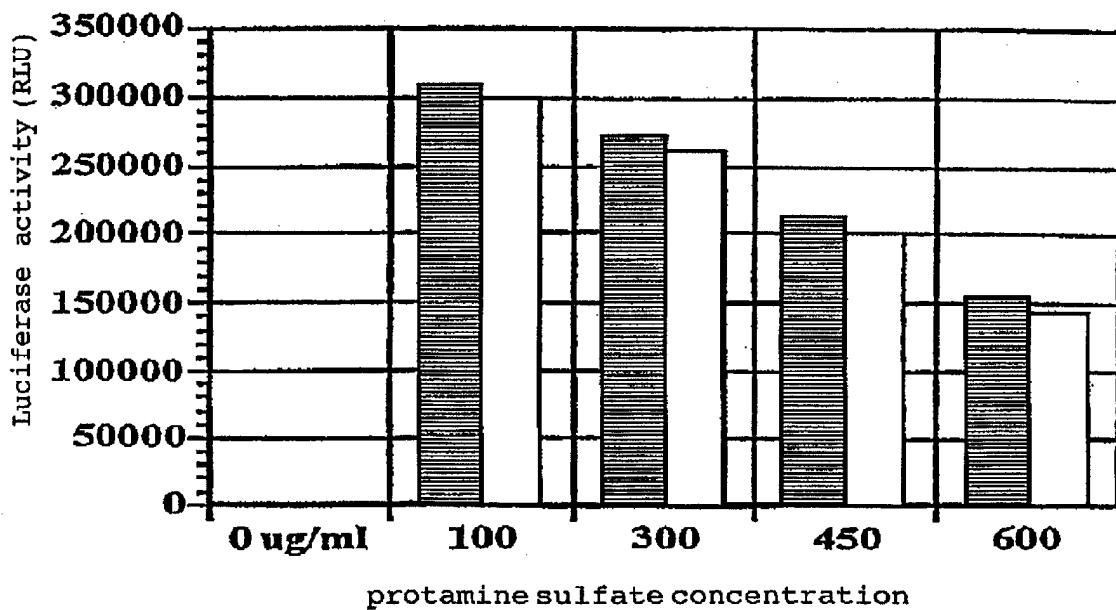
Title: VIRUS ENVELOPE VECTOR FOR GENE  
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Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 26 of 29



**Fig. 18B**

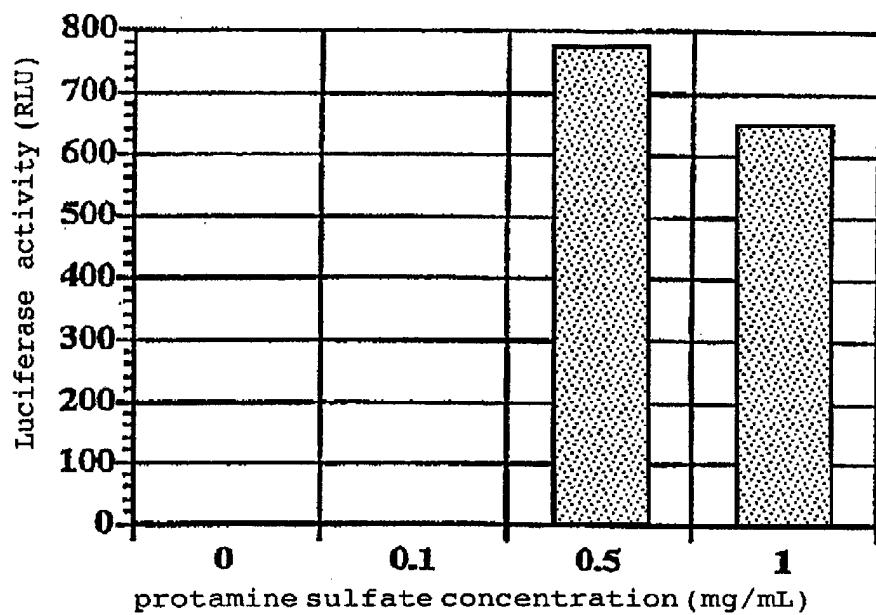
Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 27 of 29

(15 K rpm, 10 min, 20°C)



**Fig. 18C**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 28 of 29



**Fig. 19**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 29 of 29

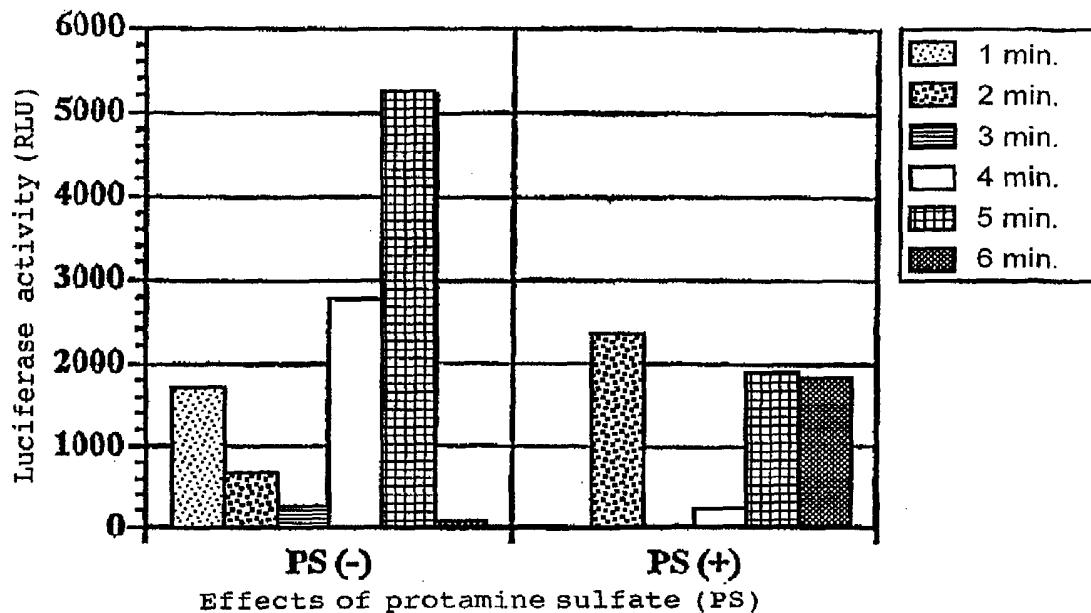


Fig. 20

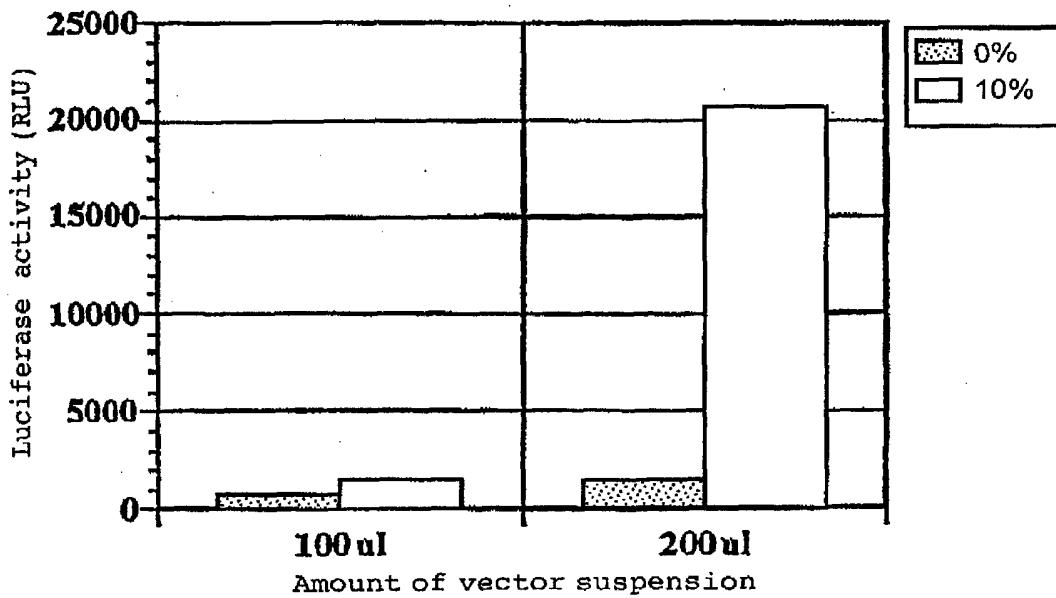


Fig. 21